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10/568,386	04/04/2006	Takeshi Azami	Q92765	1026

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SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER	
POLYANSKY, ALEXANDER	
ART UNIT	PAPER NUMBER
1793	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/568,386	AZAMI ET AL.	
	Examiner	Art Unit	
	ALEXANDER POLYANSKY	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 March 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-4,6,7,9-11,13 and 14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-4,6,7,9-11,13 and 14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claims 2-4, 6-7, 9-11, 13-14 remain for examination, where claims 2, 4, 6, 7, 11, and 13-14 have been amended; claims 1, 5, 8, and 12 have been cancelled.

Status of Previous Rejections

The 37 CFR 1.75(c) objection of claims 5-7 and 12-14 as being in improper form because a multiple dependent claims 4 and 11 is withdrawn in view of the amendment filed 12 March 2009.

The 35 U.S.C. 102(b) rejection of claim(s) 1, 2, 7-11, 13, 14 as being anticipated by Iijima et al. "Nano-aggregates of single-walled graphitic carbon nano-horns" has been withdrawn in view of the applicants' amendment filed 12 March 2009.

The 35 U.S.C. 103(a) rejection of claims 3-4, and 6 as being unpatentable over Iijima et al., "Nano-aggregates of single-walled graphitic carbon nano-horns" in view of Makoto et al., JP 2000-249540 has been withdrawn in view of the applicants' amendment filed 12 March 2009.

The 35 U.S.C. 103(a) rejection of claims 5 and 12 as being unpatentable over Makoto and further in view of Mineta has been withdrawn in view of the applicants' amendment filed 12 March 2009.

The non-statutory obviousness-type double patenting rejections based on co-pending applications 10/556,088, 10/544,400, 10/560,593, and 10/544,133 have been withdrawn in view of the applicants' amendments filed in the said copending applications and in view of the amended scope (i.e. cancellation of claims and amending independent claim 2) of the instant application.

Examination on the Merits

Claims 2-4, 6-7, 9-11, 13-14 are presented for an examination on the merits.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior office action.

Claims 2 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iijima et al.

Regarding amended claim 2, Iijima's teaching is delineated in the first office action on the merits, Iijima further teaches an apparatus for manufacturing nano-carbon that reads on the amended features as follows:

- **and to move said graphite target in a direction parallel to and a direction perpendicular to a central axis of said graphite target** (page 166, first column, second paragraph).

Iijima does not expressly teach the (1) **at a substantially constant irradiating angle**; (2) **while maintaining the substantially constant irradiating angle**. However, the amended limitations of (1) **at a substantially constant irradiating angle** and (2) **while maintaining the substantially constant irradiating angle** are directed to the operating modes of the apparatus and do not impart structurally. The amended limitations recite the manner of operating the prior art apparatus and do not differentiate the apparatus claim from the prior art. Additionally, the apparatus of Iijima is capable of being operated in the claimed manner as recited in the amended limitations. Even further, regarding the amended limitations (1) **at a substantially constant irradiating angle**; (2) **while maintaining the substantially constant irradiating angle**; and (3) **and to move said graphite target in a direction parallel to and a direction perpendicular to**

a central axis of said graphite target, it is the examiner's position that while features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function (MPEP 2114) and, expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim. See MPEP 2115. Therefore, (1) at a substantially constant irradiating angle; (2) while maintaining the substantially constant irradiating angle; and (3) and to move said graphite target in a direction parallel to and a direction perpendicular to a central axis of said graphite target do not impart patentability because the limitations are drawn to the use of the apparatus rather than having any structural significance.

Regarding claim 7, since Iijima's teaching of the amended features of claim 2 is delineated above, and in view of this, Iijima's teaching is applied to claim 7 as applied in the first office action on the merits.

Claims 9-11, 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iijima et al., in view of Mineta et al., JP 60-194066.

Regarding amended claim 9, Iijima, as applied in the previous rejection, teaches a method of manufacturing nano-carbon that reads on the amended method features as follows:

- **and moving said graphite target in a direction parallel to and a direction perpendicular to a central axis of said graphite target** (page 166, first column, second paragraph).

Iijima does not expressly teach the **at a substantially constant irradiating angle**; however, in a process similar to Iijima, Mineta teaches a method of using an apparatus which can

move the irradiated components while maintaining the irradiation angle of light constant (see fig. 4). At the time of invention it would have been obvious to a person of ordinary skill in the art to use the method of Iijima and include the movement of friction rollers up or down in view of the teaching of Mineta. The suggestion or motivation for doing so would have been to be able to keep the irradiating unit steady while ablating the graphite target which is gradually ascended as it gets smaller. Also, the motivation to keep a highly precise roll and perform precision based laser ablation would have been obvious at the time of the invention (Mineta, detailed description paragraphs 4 and 5).

Regarding claims 10-11, and 13-14, since Iijima's in view of Mineta's teaching of the amended features of claim 9 is delineated above, thus Iijima's teaching of claims 10-11 and 13-14 is as applied in the first office action on the merits.

Claims 3-4, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iijima et al., "Nano-aggregates of single-walled graphitic carbon nano-horns" in view of Makoto et al., JP 2000-249540.

Regarding claims 3-4, and 6, in view of the new rejection of the amended features of claim 2 over Iijima, the teaching of Iijima in view of Makoto is applied to claim 3 and amended claims 4 and 6 and is delineated in the previous rejection. Neither claim 4 nor 6 recite any amended structural features of the apparatus.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined

application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 2-4 and 6-7 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-8 of copending Application No. 10/555,064. Although the conflicting claims are not identical, they are not patentably distinct from each other for the following reasons:

Regarding claim 2, claim 1 of the '064 application also recites a target holding unit, a light source, a moving unit, and a recovery or collecting unit. Further, '064 claims 2, 5 and 6 teach the amended features of (1) **at a substantially constant irradiating angle**; (2) **while maintaining the substantially constant irradiating angle**; and (3) **and to move said graphite target in a direction parallel to and a direction perpendicular to a central axis of said graphite target**,

Regarding claims 3, 4, 6, and 7, claims 2-8 of '064 teach the same sheet-like and rod-like holder as claimed, and it is the examiner's position that the structure would have necessarily fulfilled the limitations of claims 3, 4, 6, and 7 which require particular methods of operating the structure already claimed, such as an angle of irradiation as claimed in claim 2 and recited in claim 2 of '064. Furthermore, the roller configuration of Claim 3 of the instant application

would have provided the claimed limitations of Claims 5 and 6 because a moving unit could be operated to rotate between rollers or to reel out target material. Further regarding claim 7, the material produced does not materially affect the apparatus, but nevertheless it is submitted that the "assemblies" of Claim 7 of the instant application would be rendered obvious by the claimed "aggregates" in the copending claim 8.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Response to Arguments

Applicant's arguments filed March 12, 2009 have been fully considered, but they are not persuasive.

Arguments are summarized as follows:

I. The Applicant submits that Iijima discloses that a graphite target rod is rotated around its axis and advanced along its axis. However, there is no teaching or suggestion in Iijima that the target rod can be moved perpendicular to the central axis. Neither Makoto nor Mineta remedies this deficiency.

II. The Applicant further submits that Iijima fails to teach maintaining a substantially constant angle of incidence of the illumination while moving the graphite target to move an irradiation position of light on the target. The Examiner alleges that this is taught by Fig. 4 of Mineta. Rather, Mineta merely describes a range of irradiation angles.

Responses are summarized as follows:

I. The examiner's position regarding to **and to move said graphite target in a direction parallel to and a direction perpendicular to a central axis of said graphite target**, is stated in

the rejection above. Furthermore, it would have been obvious to one of ordinary skill in the art that anything that rotates along its' central axis would constitute perpendicular movement with respect to its' central axis by the rotational motion since it is perpendicular to the line between the point of action of the force and the pivot point, which is central axis.

II. The examiner's position regarding (1) **at a substantially constant irradiating angle**; (2) **while maintaining the substantially constant irradiating angle** limitations is stated above. Furthermore, maintaining a substantially constant angle of incidence is a result-effective variable, because one would be motivated to do so since the constant angle of incidence allows for an even ablation of the target while the target is spun parallel and perpendicular to its' central axis. Thus, it would be prima facie obvious to maintain the angle of incidence constant. See MPEP 2144.05(II)(B). Even further, Mineta specifically discloses controlling the angle of laser light onto the rotating surface of the target (abstract).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXANDER POLYANSKY whose telephone number is (571)270-5904. The examiner can normally be reached on Monday-Friday, 8:00 a.m. EST - 5:00 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-270-6904.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ALEXANDER POLYANSKY/
Examiner, Art Unit 1793

/Roy King/
Supervisory Patent Examiner, Art Unit 1793